**MIDDLE TO LATE CENOZOIC VOLCANIC RECORD OF THE WEST ANTARCTIC ICE SHEET**. T.I. Wilch[1] and W.C. McIntosh[2], [1]Department of Geological Sciences, Albion College, Albion MI 49924 (twilch@albion.edu), [2]Department of Earth and Environmental Science, New Mexico Tech, Socorro, NM 87801.

Paleo-environmental reconstructions and $^{40}Ar/^{39}Ar$ geochronology of nineteen large polygenetic volcanoes and numerous smaller monogenetic volcanoes in Marie Byrd Land, West Antarctica provide proxy records of changing ice levels of the West Antarctic Ice Sheet since the Oligocene. Interpretations of eruptive and depositional environments are based on lithofacies studies and indicate whether the volcanoes erupted below, near, or above the level of the ice sheet. A new conceptual model of glaciovolcanism in Marie Byrd Land differentiates volcanic records of local ice levels from records of West Antarctic Ice Sheet levels. The model builds upon the traditional Icelandic table mountain model but addresses several complicating features of the glaciovolcanic environment of Marie Byrd Land. Specific complications include: ice-level feedback effects caused by obstructions to ice-flow, changes in ice level in coastal regions caused by rises or falls of sea level, glaciovolcanic interactions with slope ice, and volcanism on interfluves between regions of fast-flowing ice.

The Oligocene to Pleistocene volcanic history provides a proxy record of ice level changes in West Antarctica, with the following major conclusions: 1) the first indications for ice in West Antarctica are the early Oligocene (29-27 Ma) emergent tuff sequences at Mt. Petras, where limited local syn-eruptive glaciation is inferred; 2) the first evidence for a widespread West Antarctic Ice Sheet is Late Miocene (~9.3 Ma) glaciovolcanic sequences from across Marie Byrd Land; 3) paleo-ice-level expansions of the WAIS were more extensive at coastal sites than at inland sites; 4) the West Antarctic Ice Sheet is in a near maximum configuration that existed at several times since 9.3 Ma but was rarely exceeded; and 5) significant thickening events of the West Antarctic Ice Sheet above its present-day level are recorded only in middle and latest Pleistocene glaciovolcanic sequences.